

## **Claims**

We claim:

- 5     1.     A method for frequency correction of a received signal comprising the steps of:
  - receiving a signal from a transmitter in a WLAN communication system whereby the WLAN communication system comprises a single channel for receiving and transmitting signals;
  - 10         processing the received signal to determine a frequency offset estimate wherein the frequency offset estimate is the frequency deviation of the received signal from a local oscillator;
  - shifting the received signal by an amount corresponding to the frequency correction estimate whereby the frequency correction estimate is an averaged
  - 15     value of the frequency offset estimate and at least one prior frequency offset estimate; and
  - utilizing the frequency correction estimate to correct received signals from the transmitter.
- 20     2.     The method of claim 1 wherein the step of receiving further comprises the step of determining whether the received signal is from an access point of the wireless network and if the received signal is from the access point then performing the subsequent steps of the method.
- 25     3.     The method of claim 2 wherein the step of determining further comprises decoding a source field of a message encompassed in the received signal to determine a source of the message.

4. The method of claim 1 wherein the method is performed by a receiver of the wireless local area network wherein the receiver is encompassed in an access point and a mobile station.

5 5. A method for frequency correction of a transmitted signal comprising the steps of:

transmitting a signal from a transmitter in a WLAN communication system whereby the WLAN communication system comprises a single channel for receiving and transmitting signals;

10 processing the signal to be transmitted to determine a frequency offset estimate wherein the frequency offset estimate is the frequency deviation of the received signal from a local oscillator;

shifting the signal to be transmitted by an amount corresponding to the frequency correction estimate whereby the frequency correction estimate is an averaged value of the frequency offset estimate and at least one prior frequency offset estimate; and

15 utilizing the frequency correction estimate to correct signals to be transmitted from the transmitter.

20 6. The method of claim 5 wherein the method is performed by a transmitter of the wireless local area network wherein the transmitter is encompassed in an access point and a mobile station.

7. A system for frequency correction in a wireless local area network, such system comprising:

5 a preamble and training sequence processor configured to receive a signal from a transmitter in the wireless local area network and outputting a frequency offset estimate wherein the frequency offset estimate is a frequency deviation of the received signal from a local oscillator;

10 an averager coupled to the output of the preamble and training sequence processor where the average provides a frequency correction estimate based upon a mathematical average of the frequency offset estimate provided by the preamble and training sequence processor and at least one prior frequency offset estimate; and

15 a frequency corrector which shifts the received signal by an amount corresponding to the frequency correction estimate to output a corrected received signal.

8. The system of claim 7 further comprising a MAC subsystem coupled to the input of the averager to determine a source of a message of the received signal wherein the MAC subsystem causes the averager to provide a frequency correction estimate if the source of the message is an access point.

20 9. The system of claim 7 wherein the system is embodied in elements of the wireless local area network comprising an access point and a mobile station.

10. A system for frequency correction in a wireless local area network, such system comprising:

- means for receiving a signal from a transmitter in a WLAN communication system whereby the WLAN communication system comprises a  
5 single channel for receiving and transmitting signals;
- means for processing the received signal to determine a frequency offset estimate wherein the frequency offset estimate is the frequency deviation of the received signal from a local oscillator;
- means for shifting the received signal by an amount corresponding to the  
10 frequency correction estimate whereby the frequency correction estimate is an averaged value of the frequency offset estimate and at least one prior frequency offset estimate; and
- means for utilizing the frequency correction estimate to correct received signals from the transmitter.